

CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Withdrawn): A hydraulic shift gear mechanism for a bicycle having a handlebar, the shift gear mechanism comprising:

    a control lever;

    a positioning mechanism actuatable by the control lever, the positioning mechanism having:

        a bracket;

        a pivot shaft spaced apart from the handlebar and fixedly secured to the bracket;

        a rotating member rotatable in a first direction and a second direction about the pivot shaft;

        a push mechanism comprising a first latch segment and a push pawl biased toward the first latch segment and configured to cooperate with the first latch segment to rotate the rotating member in a first direction; and

        a return mechanism comprising a second latch segment and a return pawl, the return pawl having a first claw and a second claw which alternately engage the second latch segment when the rotating member is rotating in the second direction;

a master cylinder assembly operatively connected to the rotating member of the positioning mechanism, the master cylinder having a piston that is movable in a push direction when the rotating member rotates in a first direction, and is movable in a return direction when the rotating member rotates in a second direction;

a slave cylinder assembly;

a conduit conveying a fluid between the master cylinder assembly and the slave cylinder assembly; and

a derailleur operatively connected to the slave cylinder assembly and movable in response to the actuation of the master cylinder assembly.

Claim 2 (Currently Amended): A shift control device attachable to the handlebar of a bicycle for adjusting a slave piston of a slave cylinder assembly of a hydraulic shift gear mechanism, the shift control device comprising:

a bracket attachable to the handlebar;

a pivot shaft spaced apart from the handlebar and fixedly secured to the bracket;

a rotating member rotatable in a first direction and a second direction about the pivot shaft;

a control lever operatively connected with the rotating member, wherein the lever is biased in a neutral position and movable in a first and second direction, and wherein the neutral position is between the first and second directions;

a push mechanism configured to cooperate with and rotate the rotating member in the first direction;

a return mechanism configured to cooperate with and rotate the rotating member in the second direction;

a master cylinder assembly having a master piston operatively connected to the ~~push and the return mechanisms~~ rotating member; and

an adjusting piston adjustably extending into the master cylinder assembly.

Claim 3 (Original): The shift control device of claim 2, wherein the push mechanism comprises a first latch segment and a push pawl biased toward the first latch segment and configured to cooperate with the first latch segment to rotate the rotating member in a first direction, and wherein the return mechanism comprises a second latch segment and a return pawl, the return pawl having a first claw and a second claw which alternately engage the second latch segment when the rotating member is rotating in the second direction.

Claim 4 (Previously Amended): The shift control device of claim 3, further comprising:

a pinion gear rotatable about the pivot shaft and operatively connected to the rotating member wherein the pinion gear rotates with the rotating member; and

a rack gear engaged with the pinion gear and operatively connected to the master piston of the master cylinder assembly, wherein the rotation of the rotating member in the first direction corresponds to a movement of the master piston in a push direction and the rotation in the second direction corresponds to a movement of the master piston in a return direction.

Claim 5 (Previously Amended): The shift control device of claim 2 wherein the master cylinder assembly comprises a main chamber for the master piston and an adjuster chamber for the adjusting piston.

Claim 6 (Previously Amended): A method of adjusting an initial position of a slave piston in a hydraulic shift gear mechanism, comprising the steps of:

providing a master cylinder assembly in communication with a slave cylinder assembly, the master cylinder assembly attachable to a bicycle handlebar by a bracket and comprising a main chamber having a master piston and an adjuster chamber, wherein said adjuster chamber includes an adjusting piston threadingly engaged therein and a port for adding or removing fluid; and

rotating the adjusting piston to vary the depth in which the adjusting piston extends into the adjusting chamber.

Claim 7 (Currently Amended): A shift control device attachable to the handlebar of a bicycle for ~~controlling the piston of a master cylinder~~ adjusting a slave piston of a slave cylinder assembly of a hydraulic shift gear mechanism, the shift control device comprising:

a bracket attachable to the handlebar;

a pivot shaft spaced apart from the handlebar and fixedly secured to the bracket;

a rotating member rotatable in a first direction and a second direction about the pivot shaft;

a control lever operatively connected with the rotating member, wherein the lever is biased in a neutral position and movable in a first and second direction, and wherein the neutral position is between the first and second directions;

a push mechanism comprising a first latch segment and a push pawl biased toward the first latch segment and configured to cooperate with the first latch segment to rotate the rotating member in a first direction;

a return mechanism comprising a second latch segment and a return pawl, the return pawl having a first claw and a second claw which alternately engage the second latch segment when the rotating member is rotating in the second direction;

a pinion gear rotatable about the pivot shaft and operatively connected to the rotating member wherein the pinion gear rotates with the rotating member; and

a master cylinder assembly having a master piston;

a rack gear engaged with the pinion gear and operatively connected to the piston of the master cylinder, wherein the rotation of the rotating member in the first direction corresponds to a movement of the piston in a push direction and the rotation in the second direction corresponds to a movement of the piston in a return direction;

~~a master cylinder assembly having a master piston connected to the push and the return mechanisms; and~~

an adjusting piston adjustably extending into the master cylinder assembly.

Claim 8 (Previously Amended): A method of shifting gears in a hydraulic shift gear mechanism for a bicycle having a master piston and a master cylinder, comprising the steps of:

providing a shift control lever spaced apart from the handlebar, wherein the lever is biased in a neutral position and movable in a first direction and a second direction, and wherein the neutral position is between the first and second directions;

operating the lever in the first direction to control the motion of the master piston in a push direction;

operating the lever in the second direction to control the motion of the master piston in a return direction; and

wherein the control lever returns to the neutral position after operation.

Claim 9 (Original): The method of claim 8 wherein the first direction is the direction from the neutral position toward the handlebar, and the second direction is the direction from the neutral position away from the handlebar.

Claim 10 (Previously Amended): A hydraulic shift gear mechanism for a bicycle having a handlebar, the hydraulic shift gear mechanism comprising:

a control lever operatively connected with the rotating member, wherein the lever is biased in a neutral position and movable in a first and second direction, and wherein the neutral position is between the first and second directions;

a positioning mechanism actuatable by the control lever, the positioning mechanism having:

a pivot shaft;

a rotating member rotatable about the pivot shaft;

a push mechanism configured to cooperate with and rotate the rotating member in a first direction;

a return mechanism configured to cooperate with and rotate the rotating member in a second direction;

a slave cylinder assembly;

a master cylinder assembly operatively connected to the rotating member of the positioning mechanism, the master cylinder assembly having a primary piston that is movable in a push direction when the rotating member rotates in a first direction

and is movable in a return direction when the rotating member rotates in a second direction;

a conduit conveying a fluid between the master cylinder assembly and the slave cylinder assembly, the conduit having a volume; and

an adjuster piston threadingly engaged with the master cylinder assembly and operable to adjust the volume of the conduit.

Claim 11 (Withdrawn): A hydraulic shift gear mechanism for a bicycle having a handlebar, the shift gear mechanism comprising:

a control lever;

a positioning mechanism actuatable by the control lever;

a master cylinder assembly operatively connected to the positioning mechanism, the master cylinder assembly having a primary piston and an adjuster piston;

a slave cylinder assembly;

a conduit conveying a fluid between the master cylinder assembly and the slave cylinder assembly; and

a derailleur operatively connected to the slave cylinder assembly and movable in response to the actuation of the master cylinder assembly.

Claim 12 (Withdrawn): The hydraulic shift gear mechanism of claim 11 wherein the adjuster piston is threadingly engaged with the

master cylinder, wherein the conduit has a conduit volume, and wherein the adjuster piston is rotatably movable to adjust the conduit volume.

Claim 13 (Withdrawn): The hydraulic shift gear mechanism of claim 11 wherein the positioning mechanism comprises a bracket attachable to the handlebar of the bicycle and wherein the master cylinder assembly is attached to the bracket.

Claim 14 (Withdrawn): A hydraulic shift gear mechanism for a bicycle having a handlebar, the shift gear mechanism comprising:

    a control lever;

    a positioning mechanism actuatable by the control lever, the positioning mechanism having a bracket attachable to the handlebar of the bicycle;

    a master cylinder assembly attached to the bracket of the positioning mechanism, the master cylinder assembly having a primary piston operatively connected to the positioning mechanism and an adjuster piston, the adjuster piston threadingly engaged with the master cylinder assembly;

    a slave cylinder assembly;

    a conduit conveying a fluid between the master cylinder assembly and the slave cylinder assembly, the conduit having a conduit volume, wherein the adjuster piston is rotatably movable to adjust the conduit volume; and

a derailleuer operatively connected to the slave cylinder assembly and movable in response to the actuation of the primary piston of the master cylinder assembly.

Claim 15 (Previously added): A method of adjusting an initial position of a slave piston in a hydraulic shift gear mechanism, comprising the steps of:

providing a master cylinder assembly in communication with a slave cylinder assembly, the master cylinder assembly attachable to a bicycle handlebar by a bracket and comprising a main chamber having a master piston and an adjuster chamber, wherein said adjuster chamber includes an adjusting piston threadingly engaged therein and a bleed port; and

rotating the adjusting piston to vary the depth in which the adjusting piston extends into the adjusting chamber.